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STUDY ON THE QUESTION "IS HAWAII'S TAX STRUCTURE ADEQUATE?"

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"The point to remember is that what the government gives it must first take away"
- John S. Coleman

"Taxes grow without rain."
- Jewish Proverb

Executive Summary

In this paper, we have tried to determine whether Hawaii's tax structure is adequate. The first task in this exercise was to determine what "adequate" means, which requires answering the question "How much tax revenue is needed?" The simple answer could be "To provide enough money to run the government." But this answer brings forth the question "How much government services are required?" Lacking a clear answer to this last question, it was decided, based on the treatment in previous studies, that the tax structure would be deemed adequate if the revenue it produces can be counted on to grow at least as fast as personal income. More specifically, it was decided that the tax structure would be deemed adequate if the revenues paid into the General Fund tended to grow as fast as personal income, although the effects of shifting taxes between the General Fund and other, special funds were also examined. The General Fund was chosen for the exercise, because the money dedicated to it is used for general operation of government.

Two kinds of tax adequacy were measured. For the first kind, the tax structure is deemed to be adequate if tax revenues paid into the General Fund tend automatically to grow as fast as personal income, when the tax code, and the part of the total revenue from each tax that is dedicated to the Fund, stay the same. To test if the tax structure satisfies this kind of adequacy,

we estimated the taxes that would have been paid into the General Fund in each year from 1972 to 2004 if the tax code and the fraction of revenue from each tax dedicated to the Fund had been the same as they were in 2005. We then looked to see whether these constant-law collections grew as fast as personal income from 1972 to 2005. For the second kind of tax adequacy, the tax structure is deemed to be adequate if tax revenues actually paid into the General Fund tended historically to grow as fast as personal income, after accounting for legislative changes that alter the tax code or the amount of taxes dedicated to the Fund.

To determine whether the tax structure is adequate under the first definition, we constructed a constant-law time series of General Fund tax revenues. The constant-law revenue was calculated as the amount of taxes that would have been paid into the Fund from 1972 to 2005 if the tax code and the fraction of each tax dedicated to the Fund had been the same in each year as they were in fiscal year 2005. We compared the growth in the constant-law revenues with the growth of personal income. To determine whether the tax structure is adequate under the second definition, we simply compared the growth in actual General Fund tax revenues with the growth in personal income.

We found that the current tax structure satisfies both kinds of tax adequacy. According to our calculations, the constant-law General Fund tax revenues tended to grow at a rate about 5 percent greater than personal income since 1972 (see table 4), whereas the actual, unadjusted revenues paid into the Fund tended to grow at a rate about 3 percent greater than personal income (see table 5).

To investigate the effects of shifts in revenues between the General Fund and other special funds, we also measured General Fund tax revenues as they would have been if the fraction of each tax dedicated to the Fund had been kept constant, but other changes in the tax

code were allowed to occur. We found that under these circumstances the General Fund tax revenues would have grown at an average rate about 4 percent faster than personal income (see table 6). Thus, the Legislature appears to have taken two types of actions to reduce the automatic growth in General Fund tax revenues. One type of action has been to reduce statutory tax rates or to reduce the tax base, such as the adjustments to the Individual Income Tax made in 1987 and 1998. The second type of action has been to shift tax revenues from the General Fund to other special funds, such as the reallocations of revenues from the Transient Accommodations Tax that occurred in 1992 and 1993 and the reallocations of revenues from the Conveyance Tax that occurred in 1994. Our calculations imply that on average, over the long run, both types of actions have had about the same effect in reducing the growth rate of General Fund tax revenues. That is, each has reduced the long-run elasticity of General Fund tax revenues with respect to personal income by about 1 percent.

Our results are long-run averages for the tax structure as a whole. In the short run, General Fund tax revenues sometimes grew more rapidly and sometimes more slowly than personal income. This was true for the constant-law time series and for the unadjusted collections. Some of the differences indicate rather sharp misalignments. For example, from 1981 to 1982, actual taxes paid into the General Fund shrank by 3.7 percent, whereas personal income grew by 6.7 percent. In most years, however, the revenue growth exceeded the growth in personal income.

Structural changes in Hawaii's economy, such as a change in the relative importance of military spending or tourism, can alter the relationship between growth in tax revenues and growth in personal income. In other words, tax adequacy in the past is no guarantee of tax adequacy in the future. Nevertheless, if future changes in Hawaii's economy remain within the

norm of those that occurred in the recent past, then Hawaii's tax structure should continue to produce revenue growth in line with the growth in personal income.

I. Introduction

The question is often posed "Are Hawaii's taxes adequate?" Those asking the question seldom appreciate how hard it is to answer. The first obstacle is to define what "adequate" means. The answer is usually something like "Taxes are adequate if they provide enough revenue to pay for needed government services," but this answer merely begs the question, as it doesn't tell us what level of government services we need. The amount of government services is not immutable: People agree on how much of them they want to consume at the same time that they agree on how much they want to pay in taxes. In fact, the amount of government services people want to consume depends importantly on the tax system. For example, a poorly designed tax system inflicts more pain on taxpayers per dollar of revenue and causes people to choose to pay less in taxes and to provide less of government services. Also, as anyone who has watched a budget cycle knows, government spending can be strongly influenced by the amount of revenue the existing taxes have generated.

The present study avoids answering directly the question of whether taxes are adequate, and considers instead a simpler, more tractable question. It asks how tax revenue dedicated to the General Fund would have grown relative to personal income in Hawaii in the recent past if there had been no legislated changes in the taxes (that is, if there had been no changes in statutory tax rates or in the definition of any tax base) and if the share of each tax dedicated to the General Fund had remained constant. This is the same exercise done by previous authors

who have examined the adequacy of Hawaii's taxes.[1] Although subject to shortcomings (as discussed below), the exercise is intended to provide useful information on the question of whether the tax structure will tend to provide the right amount of revenue if people happen to want spending on government services to grow at the same rate as their personal income.[2] We also compare how tax collections actually varied with income, after legislated changes in tax laws. This second exercise tells us if the tax structure generates adequate revenue, after allowing for legislative responses to changes in the economy. For purposes of the study, the tax structure will be considered adequate if the revenue it generates tends to grow at a rate at least as great as the growth in total personal income.

The presumption is sometimes made that, without legislative interference, tax revenues will at least keep pace with growth in personal income, because the personal income tax, which is an important component of the tax structure, is imposed at rates that escalate as income increases - the taxpayer moves to a higher rate of tax as his or her income rises. However, a variety of other factors can cause tax revenues to grow more slowly than personal income. In fact, tax collections do not grow at exactly the same rate as tax liabilities, due to such factors as tax audits, delinquent collections, a change in compliance, or a change in the number of tax payment dates in the calendar year.

Some caveats are in order for those who would use the results of the study to predict how tax collections will grow with personal income in the future. For one thing, some taxes are only loosely connected to personal income, so it would be unreasonable to expect them to grow at the same rate relative to income in the future as they have in the past. For example, the Conveyance

[1] See James Mak and Shamsuddin Ahmad, "Is Hawaii's Tax system Adequate?" *Report of the 1989 Tax Review Commission*, and Bruce W. Kimzey and Brent D. Wilson, "Tax Adequacy in Hawaii." *Report of the 2001-2003 Tax Review Commission.*

[2] It is reasonable to suppose that they do. In recent years, there has been no clear secular trend in the portion of their total income that people in Hawaii have chosen to consume in the form of government services provided by the State. See Figure 1 below.

Tax depends on transfers of real property, the Estate and Transfer Tax (before its recent effective repeal) depended on transfers of estates, and what happens to revenues from taxes on tobacco and liquor depends more on changes in population and consumption trends than on changes in income.

Even if the tax is closely tied to income, growth in collections can depend on the reason for the income growth. For example, suppose growth in total personal income will come less from population growth and more from growth in per capita income in the future than has been the case in the past. Then, one might expect revenue from the Individual Income Tax to grow by more than the historic norm, because the tax rates are graduated. Or, compare what happens if future personal income growth comes about as a result of increased tourism with what happens if the same growth were to occur as a result in an increase in military personnel residing in the State. Neither tourists nor military personnel stationed in Hawaii are likely to be subject to the State's Individual Income Tax, but the income of the military personnel is included in the State's personal income. Also tourists pay the Transient Accommodations Tax on their lodging and they pay General Excise tax on their purchases, whereas military personnel do not pay tax on their lodging or on their purchases from military commissaries.

From these examples, it is clear that the past behavior of tax collections relative to the growth in total personal income does not necessarily provide a good guide for the future. Stated another way, tax adequacy in the past is no guarantee of tax adequacy in the future.

The next section describes the role played by the General Fund in the State's overall budget and presents data on the major taxes levied by the State. Section III describes the methodology used to gauge the adequacy of taxes dedicated to the General Fund and provides the results of our calculations.

II. Hawaii's State Budget – An Overview

The State's total budget is divided into several categories of funds, called Governmental Funds, Proprietary Funds, and Fiduciary Funds. Governmental Funds contain the accounts for most of the State's activities that are supported principally by taxes and by intergovernmental transfers. The General Fund is one of the Governmental Funds. Proprietary Funds contain the accounts for activities of the State that are more like commercial enterprises. Proprietary Funds include the Unemployment Compensation Fund and funds to account for the operations of highways, airports, harbors, and other business-like activities. The Fiduciary Funds are used to account for resources held for the benefit of parties outside the State.

Although the General Fund comprises only a part of the State's total budget, it is appropriate to evaluate tax adequacy by looking at tax revenues dedicated to the Fund, because the Proprietary Funds are virtually all self-supporting and the Fiduciary Funds are quite minor. Also, the bulk of tax revenues are dedicated to the General Fund and taxes typically account for about 90 percent of all General Fund Revenues. In fiscal year 2005, tax revenues dedicated to the General Fund were $3,998 million, out of total State tax revenues of $4,597 million. Total revenues for the General Fund (including non-tax revenues[3]) were $4,486 million, total revenues for all Governmental Funds were $6,475 million, and total revenues for all types of the State's funds were $7,095 million.

Table 1 shows total revenues and expenditures in the Governmental Funds and in the General Fund for each fiscal year since 1970, along with total personal income.

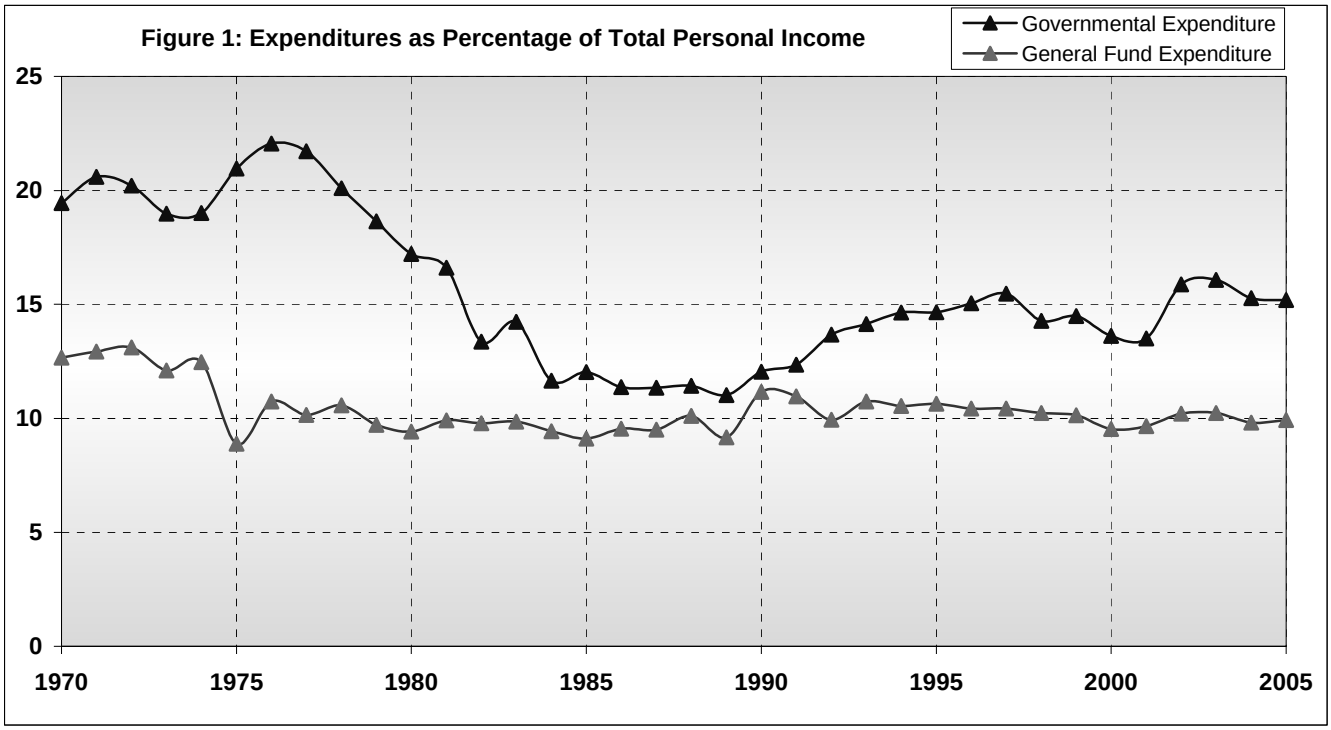
[3] This includes non-tax receipts and charges, such as federal grants, fines and forfeitures, charges for services, and revenues from investments of State funds.

Table 1: General Fund and Governmental Funds Revenue and Expenditures (in $Millions)

Year	General Fund Revenue	General Fund Expenditure	Governmental Revenue	Governmental Expenditure	Total Personal Income
1970	464	463	596	710	3,653
1971	511	526	665	838	4,069
1972	547	576	723	888	4,396
1973	608	598	814	936	4,933
1974	708	686	940	1,045	5,499
1975	626	557	1,115	1,312	6,258
1976	685	726	1,310	1,491	6,759
1977	737	744	1,388	1,591	7,325
1978	816	849	1,505	1,613	8,026
1979	943	878	1,624	1,683	9,030
1980	1,085	973	1,728	1,775	10,319
1981	1,199	1,146	1,801	1,918	11,557
1982	1,186	1,208	1,669	1,648	12,330
1983	1,253	1,333	1,754	1,923	13,515
1984	1,355	1,379	1,772	1,702	14,610
1985	1,476	1,451	1,880	1,914	15,918
1986	1,605	1,598	2,050	1,901	16,728
1987	1,890	1,688	2,353	2,012	17,742
1988	2,076	1,944	2,590	2,197	19,220
1989	2,341	1,953	2,905	2,349	21,309
1990	2,452	2,624	3,182	2,832	23,511
1991	2,690	2,799	3,510	3,153	25,531
1992	2,708	2,681	3,671	3,686	26,968
1993	2,953	3,063	3,902	4,028	28,502
1994	3,086	3,059	4,163	4,245	29,004
1995	2,969	3,169	4,166	4,364	29,793
1996	3,194	3,124	4,550	4,505	29,947
1997	3,161	3,186	4,567	4,722	30,543
1998	3,232	3,214	4,590	4,485	31,411
1999	3,286	3,251	4,651	4,641	32,048
2000	3,284	3,201	4,840	4,573	33,588
2001	3,442	3,365	5,150	4,703	34,822
2002	3,441	3,656	5,100	5,685	35,816
2003	3,789	3,806	5,370	5,972	37,172
2004	3,908	3,840	5,790	5,972	39,123
2005	4,486	4,185	6,475	6,400	42,135

Sources: Data on the Governmental Funds are from Hawaii Department of Accounting and General Services. Data on the General Fund are from Hawaii Department of Budget and Finance. Data on total personal income are from Bureau of Economic Analysis, U.S. Department of Commerce.

Figure 1 shows how the ratio of expenditures in each type of fund to total personal income has varied since 1970. From 1970 to 1974, General Fund spending varied from about 12



Source: Calculated from Table 1

percent to 13 percent of total personal income. Since 1975, however, it has remained fairly steady at about 10 percent of total personal income, varying only between a low of about 9 percent (in 1975, 1985 and 1989) to a high of about 11 percent (in 1990, 1991 and 1993), and it reveals no secular trend upward or downward.

Total spending in all Governmental Funds varied more widely relative to total personal income. The ratio to total personal income was between about 18 percent and 22 percent from 1970 to 1979, but then it declined rapidly, reaching a low of about 11 percent in 1989. Since 1980, it does not appear to have followed any strong secular trend, although it has moved up from a cyclical low experienced from 1984 through 1990, a period of unusually strong growth

and low unemployment insurance payments. The figure implies that the share of total income that people in Hawaii want to devote to State government services has declined since 1970, but has shown no strong secular tendency to increase or decrease since 1980.

Table 2 shows tax revenues, total revenues, expenditures, the surplus or deficit, and the balance for the General Fund, by fiscal year, since 1972. It also shows the constitutionally mandated ceiling for spending from the General Fund.[4] Each year's ceiling is based on the ceiling in the prior year. From these data, it is clear that the ceiling has not been binding in recent years.

Table 3 shows total collections for each of the State's taxes and the percentage of the tax that was dedicated to the General Fund in each fiscal year since 1972. The following are the major taxes that contribute to the General Fund: the General Excise and Use Taxes (GE), the Individual Income Tax (Iinc), the Corporation Income Tax (Cinc), the Public Service Company Tax (PSC), the Tax on Insurance Premiums (Ins), the Tax on Liquor (Liq), Taxes on Cigarettes and Tobacco (Tob), the Tax on Banks and Other Financial Corporations (Fin), the Transient Accommodations Tax (TAT), the Conveyance Tax (Con), and the Estate and Transfer Tax Accommodations Tax (TAT), the Conveyance Tax (Con), and the Estate and Transfer Tax (Inh).[5] A miscellaneous category (Misc) is used to summarize all other State taxes that go into the General Fund, and includes charges for fuel retail dealer permits, fuel tax penalty and interest payments, general excise license fees and transient accommodation license fees. The major

[4] The spending ceiling is imposed by Article VII, Section 9 of the 1978 Hawaii State Constitution. The ceiling limits the growth in appropriations from the General Fund (exclusive of the federal funds it receives) to the estimated growth in total personal income in the State.

[5] A number of other taxes are paid into the General Fund, but they are minor and together account for less than one-fourth of one percent of the General Fund revenues. Hawaii's Estate and Transfer Tax is included in the analysis, even though it has been effectively repealed for the estates of people who died after December 31, 2004. The Conveyance Tax was increased substantially for real estate transfers recorded after June 30, 2005, and part of the revenue was dedicated to a new special fund that was established to make rental housing more affordable.

Table 2: General Fund Revenues, Expenditures and Expenditure Ceilings (in $Millions)						
Year	Tax Revenue	Total Revenue	Total Expenditure	Surplus or Deficit	Balance*	Expenditure Ceiling
1972	379	547	576	-30	-30	
1973	425	608	597	11	-19	
1974	490	708	686	23	4	
1975	572	626	557	70	74	
1976	628	685	726	-42	32	
1977	676	737	744	-7	25	
1978	737	816	849	-33	-8	
1979	864	942	878	64	57	919
1980	989	1,085	973	112	169	1,005
1981	1,082	1,199	1,146	53	222	1,109
1982	1,048	1,186	1,207	-22	200	1,234
1983	1,135	1,253	1,333	-81	119	1,421
1984	1,233	1,355	1,379	-24	95	1,560
1985	1,359	1,476	1,451	24	119	1,691
1986	1,474	1,605	1,598	8	127	1,804
1987	1,654	1,890	1,688	202	329	1,881
1988	1,850	2,076	1,944	132	461	2,001
1989	2,116	2,378	2,220	159	619	2,170
1990	2,136	2,452	2,624	-173	456	2,230
1991	2,375	2,690	2,799	-110	347	2,568
1992	2,411	2,708	2,681	28	374	2,825
1993	2,519	2,953	3,063	-110	264	3,109
1994	2,622	3,086	3,059	27	291	3,327
1995	2,592	2,969	3,169	-201	90	3,591
1996	2,758	3,194	3,124	71	161	3,778
1997	2,772	3,161	3,186	-25	136	3,920
1998	2,849	3,232	3,214	18	154	4,032
1999	2,854	3,286	3,251	35	189	4,091
2000	2,973	3,284	3,201	83	272	4,185
2001	3,158	3,442	3,365	77	349	4,170
2002	3,049	3,441	3,656	-215	134	4,310
2003	3,182	3,789	3,806	-17	117	4,462
2004	3,447	3,908	3,840	67	185	4,680
2005	3,998	4,486	4,185	302	486	4,899

* Cumulative balance since 1972.
Sources: Hawaii Department of Taxation and Hawaii Department of Budget and Finance

taxes dedicated entirely to Proprietary Funds are the taxes on liquid fuels (Fuel), taxes on motor vehicles (MV), and the employment security contributions (Emp).

III. Measuring "Tax Adequacy"

As we have already said, we gauge tax adequacy by comparing the growth rate of total personal income with the growth rate of tax revenues dedicated to the General Fund, where the annual tax collections are adjusted to reflect the revenues that would have been produced by the structure of the taxes in place for fiscal year 2005. More specifically, we calculate the "income elasticity" of the "constant law" tax collections for each tax and for the aggregate of all taxes dedicated to the General Fund. The income elasticity of a tax is measured as the percent growth in tax collections divided by the percent growth in personal income. An elasticity of unity means that revenue from the tax tended to grow at the same rate as income; an elasticity greater than one means that the revenue tended to grow faster than income; and an elasticity less than one means that the revenue tended to grow more slowly than income.

The constant-law collections for a tax is a time series of the annual collections of the tax that would have occurred if there had been no changes in the statutory tax rate, or in the definition of the tax base. To create the constant-law collections for the aggregate of all taxes dedicated to the General Fund, it is also necessary to adjust collections of each tax to remove the effects of any changes in the share of the tax dedicated to the General Fund.

Table 3: Tax Revenues (in $Millions) and the Percentage of Each Tax Dedicated to the General Fund

Year	GE	%	Iinc*	Fin	%	Tob	%	TAT	%	Con	%	Misc	%	Cinc*	Inh*	Ins*	Liq*	PSC*	Fuel**	MV**	Emp**	Total	%
1972	186	100	120	3.1	100	6.5	100	13.0	100	0.6	100	0.2	100	11.8	3.6	8.3	9.4	15.7	28.3		18.3	412	89
1973	211	100	135	3.7	100	7.1	100	15.0	100	0.9	100	0.2	100	12.9	2.1	9.2	10.2	18.3	29.8		24.0	464	89
1974	244	100	152	3.6	100	8.3	100	17.5	100	1.0	100	0.3	100	18.2	2.7	9.5	11.4	21.2	29.6		25.2	527	90
1975	287	100	169	3.3	100	8.7	100	20.8	100	0.7	100	0.3	100	31.5	3.5	9.9	12.8	24.7	31.6		30.1	613	90
1976	310	100	185	2.5	100	9.6	100	24.5	100	0.8	100	0.3	100	32.9	3.3	16.1	15.0	28.6	41.5		49.0	694	87
1977	341	100	203	4.9	100	10.3	100	27.7	100	0.9	100	0.3	100	22.7	4.1	13.3	16.2	31.2	44.2		61.4	754	86
1978	367	100	227	5.2	100	11.0	100	30.1	100	1.3	100	0.3	100	23.8	4.0	15.7	18.0	33.4	46.1	6.9	73.7	834	85
1979	431	100	265	7.6	100	11.9	100	37.7	100	1.9	100	0.4	100	32.3	4.1	18.5	20.4	33.9	48.3	8.0	75.5	958	87
1980	498	100	312	7.8	100	12.8	100	41.8	100	2.3	100	0.4	100	42.4	4.3	22.2	13.0	32.5	51.1	8.4	67.5	1075	89
1981	549	100	335	5.8	100	13.8	100	43.9	100	2.0	100	0.4	100	47.0	4.6	24.0	7.0	50.2	53.1	8.4	58.8	1158	90
1982	577	97	283	3.9	100	14.0	100	48.1	100	1.5	100	0.4	100	39.3	5.1	27.8	7.7	57.0	52.6	8.5	58.3	1136	88
1983	601	97	347	-2.4	100	17.6	100	52.6	100	1.5	100	0.4	100	24.5	6.4	26.4	9.3	66.4	53.6	8.9	67.6	1228	89
1984	639	98	403	0.6	100	20.0	100	55.0	100	1.8	100	0.4	100	36.4	6.7	26.6	-0.2	59.6	54.9	9.3	76.3	1335	89
1985	684	98	429	3.9	100	19.7	100	65.9	100	1.9	100	0.4	100	44.8	12.3	28.7	20.6	62.3	58.5	9.6	68.7	1444	90
1986	747	98	467	4.9	100	19.7	100	67.6	100	2.0	100	0.4	100	39.6	6.0	34.6	29.9	70.3	67.5	15.3	67.0	1571	90
1987	818	99	543	15.3	100	19.1	100	67.7	100	3.6	100	0.4	100	61.5	5.2	36.0	34.6	61.8	73.3	17.8	76.1	1832	90
1988	920	98	626	12.0	100	21.3	100	67.3	100	4.2	100	0.5	100	66.0	7.3	38.0	38.2	63.6	85.2	18.7	77.4	2045	90
1989	1025	99	768	15.8	100	24.4	100	76.0	100	5.2	100	0.5	100	72.3	6.7	33.4	38.6	64.9	91.1	19.4	53.1	2294	92
1990	1177	91	695	19.9	100	23.5	100	82.4	100	8.1	100	3.4	100	74.9	16.3	36.9	40.3	69.6	107.2	20.3	79.0	2454	87
1991	1279	91	873	20.4	100	26.3	100	79.2	21	5.7	100	0.9	94	95.9	11.9	45.1	40.8	74.9	108.5	21.2	84.0	2766	86
1992	1295	93	907	24.0	100	27.4	100	80.0	5	4.0	100	0.7	100	43.8	16.4	60.4	41.5	82.3	128.3	40.7	44.7	2796	86
1993	1303	100	923	23.8	100	32.2	100	80.3	5	3.8	100	0.7	100	29.3	11.8	66.9	39.3	86.2	130.5	59.5	65.6	2856	88
1994	1332	100	963	29.4	100	32.7	100	76.5	5	7.7	50	0.7	100	39.0	28.1	63.7	39.0	92.3	137.4	57.8	88.6	2988	88
1995	1363	100	926	17.0	100	35.4	100	98.0	4	7.0	50	0.7	100	30.2	16.4	62.3	38.4	100.5	136.0	61.5	122.8	3015	86
1996	1432	100	1000	17.1	100	39.6	100	115.7	4	5.7	50	0.7	100	48.4	17.5	59.2	37.8	104.1	139.9	61.5	183.5	3263	85
1997	1457	100	976	9.7	100	36.4	100	125.5	4	6.0	50	0.6	100	57.8	22.2	55.8	38.3	114.4	138.6	62.6	170.0	3272	85
1998	1425	100	1084	15.5	100	36.1	100	127.1	4	6.9	50	0.5	100	46.2	19.6	59.4	38.9	120.3	136.0	63.6	155.1	3334	86
1999	1447	100	1069	9.8	100	42.3	100	136.5	21	7.7	64	0.6	50	42.6	28.7	52.5	38.5	121.1	136.0	65.3	149.0	3347	85
2000	1536	100	1065	7.1	65	42.3	100	168.6	0	9.5	63	0.8	93	68.2	22.8	68.7	39.0	119.5	136.4	78.1	150.0	3512	85
2001	1640	100	1105	-0.3	na	55.1	100	177.2	17	10.5	63	0.7	100	60.8	17.5	72.1	37.8	134.6	143.0	83.4	141.2	3678	86
2002	1612	100	1072	7.2	73	65.5	98	157.6	17	9.8	50	0.6	100	45.5	16.6	67.9	39.1	93.4	144.7	80.6	112.0	3525	87
2003	1793	100	1038	22.3	91	72.3	99	170.9	1	11.1	50	0.7	100	8.3	15.5	73.2	41.2	114.1	148.7	88.4	136.0	3734	85
2004	1900	100	1169	1.5	na	79.4	99	181.8	3	15.8	50	0.7	100	56.7	9.8	78.1	41.3	99.5	160.1	92.0	158.3	4044	85
2005	2137	100	1381	38.5	95	85.2	99	198.8	6	24.6	50	0.8	100	85.6	12.7	83.1	43.7	108.7	162.9	100.3	134.5	4597	87

Notes: * 100% went to General Fund throughout the period from 1972 to 2005. ** None went to General Fund . "na" denotes not applicable.
Source: Hawaii Department of Taxation

Our constant-law tax collections are based on the tax law in place in fiscal year 2005, so to produce them we had to estimate the contributions to the General Fund that each tax would have generated in each year other than 2005 if the tax rate, the tax base, and the share dedicated to the General fund had been the same as they were in fiscal year 2005. The actual adjustments made to achieve the constant-law tax collections are described in the appendix.

The constant-law collections for each tax and the elasticity with respect to the growth in personal income are displayed in Table 4. The final row in the table shows the income elasticity of the tax, calculated by regressing the logarithm of the adjusted tax collections against the logarithm of total personal income. The Individual Income Tax (Iinc) has income elasticity greater than one, just as one might expect. The General Excise and Use Taxes (GE) and the Public Service Company Tax (PSC) were combined for the purpose of calculating the constant-law tax collections, because an important part of the PSC tax (ground transportation services) was shifted to the General Excise Tax in 2001. The combined taxes have elasticity greater than one. Likewise, the Tax on Insurance Premiums (Ins), the Conveyance Tax (Con), and the Estate and Transfer Tax (Inh) have elasticities greater than one. The income elasticity for the Tax on Banks and other Financial Corporations (Fin) is close to one. The Transient Accommodations Tax (TAT), the Corporation Income Tax (Cinc), and the basket of taxes in the miscellaneous category (Misc) all have elasticities substantially less than one. The income elasticities for the Tax on Liquor (Liq) and the Taxes on Cigarettes and Tobacco (Tob) are less than one, as expected. The overall income elasticity for the aggregate of all taxes dedicated to the General Fund is 1.05.

The Estate and Transfer Tax was effectively eliminated for decedents dying after December 31, 2004. Therefore, we also calculated the overall income elasticity for the aggregate

of all taxes dedicated to the General Fund excluding this tax. The resultant elasticity (1.05) is the same as when the tax is included.

We have examined the adequacy of the current structure of taxes dedicated to the General Fund by examining past behavior of the revenue produced by the structure, after removing the effect of legislative changes. Another way to view tax adequacy is to define the tax structure more broadly to include legislative changes that are made from time to time. In other words, instead of asking whether the tax structure automatically provides the needed revenue, we ask whether the government has proven adept at making necessary adjustments when revenues were deemed to be either overabundant or insufficient. There are two ways such adjustments can be made. One way is to change the tax code, either by changing tax rates or by changing the definition of what is subject to tax. The other way is to move tax revenues into, or out of the General Fund, for example, by "earmarking" revenues previously dedicated to the General Fund to a special-purpose fund.[6] As before, the question of how much revenue is needed is answered by arbitrarily assuming that revenue needs grow at the same rate as total personal income. In this case, adequacy of taxes dedicated to the General Fund can be measured by looking at the income elasticity of the taxes actually paid into the General Fund.[7]

Table 5 shows the income elasticities of the taxes actually paid into the General Fund. As shown in the table, the income elasticity of the aggregate of the taxes is 1.03. Because it is lower than the constant-law income elasticity, our calculations imply that the Legislature has tended to

[6] Lowell Kalapa has described the practice in various articles. For a recent example, see his article "If Earmarking Proposal is Adopted, Hawaii Tax Increase Is Guaranteed," *Hawaii Reporter*, July 15, 2006.

[7] If legislated changes are allowed, it is reasonable to suppose that moneys may be transferred among the various State funds as the need arises. This suggests that tax adequacy should be measured for the aggregate of all tax collections, as well as for those dedicated to the General Fund. However, the main tax not included in the General Fund is the employment security contributions (Emp). Revenues from this tax tend to grow with income, but the need for the revenues does not, and is actually countercyclical. Therefore, it would be hard to justify the arbitrary assumption that the need for total tax revenues grows at the same rate as income if this tax is included in the total. Lacking a usable definition for revenue needs, we cannot construct a meaningful measure of tax adequacy for the aggregate of all tax collections.

Table 4: Long-run Elasticities of Adjusted Individual Taxes Dedicated to the General Fund ($ in Millions)

Year	GE+PSC	Iinc	Cinc	TAT	Ins	Liq	Tob	Inh	Fin	Con	Misc	Total
1972	197.7	91.3	8.7	2.9	6.7	9.4	15.4	3.6	2.5	0.3	0.8	339
1973	224.0	102.4	9.6	3.1	7.4	10.2	16.8	2.1	3.0	0.4	0.2	379
1974	259.7	114.9	13.5	3.2	7.7	11.4	19.6	2.7	2.9	0.5	0.3	436
1975	305.1	132.7	23.4	3.4	8.0	12.8	20.5	3.5	2.7	0.4	0.3	513
1976	330.4	145.1	24.4	3.6	13.0	15.0	22.6	3.3	2.0	0.4	0.3	560
1977	363.7	158.7	16.9	3.8	10.8	16.2	24.3	4.1	3.9	0.4	0.3	603
1978	391.6	178.2	17.8	4.0	12.7	18.0	25.9	4.0	4.2	0.7	0.3	657
1979	455.2	206.5	24.1	4.4	15.0	20.4	28.0	4.1	6.2	0.9	0.4	765
1980	521.9	242.0	31.7	4.7	18.0	23.4	30.1	4.3	6.4	1.1	0.4	884
1981	585.4	260.7	35.1	4.8	19.4	25.7	32.5	4.6	4.8	1.0	0.4	974
1982	618.3	285.3	29.5	5.0	22.5	27.4	33.0	5.1	3.3	0.7	0.4	1,031
1983	649.4	289.0	18.4	5.3	21.3	29.1	41.5	6.4	-1.9	0.8	0.4	1,060
1984	693.2	316.7	27.2	5.5	21.5	31.4	47.0	6.7	0.5	0.9	0.4	1,151
1985	731.6	337.1	33.5	6.1	23.2	28.5	46.5	12.3	3.2	0.9	0.4	1,223
1986	784.4	366.1	29.8	6.2	28.0	33.5	46.5	6.0	4.2	1.0	0.4	1,306
1987	862.4	421.1	45.8	6.2	29.1	36.8	44.9	5.2	12.3	1.8	0.4	1,466
1988	966.0	509.8	49.2	6.2	30.8	38.2	50.3	7.3	9.7	2.1	0.5	1,670
1989	1,072.2	621.6	54.2	6.7	27.0	38.6	57.5	6.7	12.7	2.6	0.5	1,900
1990	1,246.3	660.6	56.8	7.1	29.9	40.3	55.4	16.3	16.0	4.0	3.4	2,117
1991	1,358.6	763.6	72.6	6.8	36.5	40.8	61.9	11.9	16.5	2.8	0.8	2,352
1992	1,372.0	751.8	33.9	6.9	48.9	41.5	64.6	16.4	19.4	2.0	0.7	2,336
1993	1,389.1	768.6	23.3	6.9	54.1	39.3	76.0	11.8	19.2	1.9	0.7	2,367
1994	1,424.5	779.7	30.4	5.4	51.6	39.0	76.0	28.1	23.9	3.8	0.7	2,438
1995	1,463.8	765.8	23.9	6.9	50.4	38.4	82.4	16.4	13.9	3.5	0.7	2,439
1996	1,550.9	778.9	37.1	8.1	47.9	37.8	92.1	17.5	13.9	2.8	0.7	2,559
1997	1,556.6	788.9	44.5	8.8	45.2	38.3	84.8	22.2	8.1	3.0	0.6	2,570
1998	1,545.7	842.9	51.5	8.9	48.1	38.9	80.5	19.6	15.6	3.5	0.5	2,623
1999	1,568.4	897.5	50.6	9.0	42.5	38.5	59.2	28.7	11.0	3.8	0.6	2,680
2000	1,655.8	956.6	66.4	10.1	55.7	39.0	59.3	22.8	8.6	4.8	0.7	2,850
2001	1,794.6	1,008.6	77.1	10.6	58.8	37.8	77.1	17.5	5.1	5.3	0.7	3,060
2002	1,740.2	1,040.6	60.3	9.5	60.1	39.1	91.8	16.6	13.3	4.9	0.6	3,077
2003	1,876.8	1,048.2	28.8	10.3	70.2	41.2	84.3	20.7	4.7	5.6	0.7	3,191
2004	1,999.9	1,176.1	65.3	10.9	77.0	41.3	85.5	19.7	17.9	7.9	0.7	3,502
2005	2,245.3	1,381.5	85.6	11.9	83.1	43.7	85.2	50.8	36.6	12.3	0.8	4,037
Elasticity	**1.03**	**1.18**	**0.68**	**0.56**	**1.05**	**0.64**	**0.79**	**1.12**	**0.98**	**1.37**	**0.46**	**1.05**

Source: Elasticities computed from Hawaii Department of Taxation data

adjust the General Fund taxes, or the proportions of the taxes dedicated to the Fund, to reduce the automatic growth in the Fund's tax revenues.

The income elasticity of the aggregate of the taxes excluding the Estate and Transfer Tax is 1.02. The aggregate elasticity for the unadjusted taxes dedicated to the General Fund is close

to the corresponding income elasticity of the constant-law collections, but there are some rather large differences for the individual taxes. For example, the income elasticity of the unadjusted Individual Income Tax collections (Iinc) is substantially lower than that of the constant-law collections (1.09, compared with 1.18 for the constant-law collections). The difference arises, because important changes were made to the income tax rates in 1986 and in 1998.[8] Other large differences show up in the income elasticities for the Transient Accommodations Tax, the Tax on Cigarettes and Tobacco, and the Conveyance Tax. There were important changes to the rates of all three taxes over the period, and there were also important changes in the shares of the Transient Accommodations Tax and of the Conveyance Tax that are dedicated to the General Fund.

Finally, we calculated how revenues from taxes used for the General Fund have tended to grow, without regard to the proportions of the taxes that are dedicated to the Fund. That is, the General Fund tax revenues were measured as if each tax used for the Fund was dedicated entirely (100 percent) to the Fund. The calculations show how changes in the proportions of taxes dedicated to the Fund have affected growth in its revenues. The calculations are displayed in table 6. The long-run elasticity with respect to personal income is 1.04, which is higher than that for the unadjusted series but lower than that for the constant-law series. This implies that, over the long run, changes in the proportions of taxes dedicated to the General Fund have been used to reduce the automatic growth in the Fund's tax revenues.

So far, we have examined the question of tax adequacy by comparing the secular trends in growth of tax collections with the growth of income. However, the trends mask some large short-run variations in the relationship between changes in tax collections and changes in income. Table 7a shows the short-run income elasticities for the constant-law collections for

[8] See the discussion in the appendix.

Table 5: Long-Run Elasticities of Unadjusted Individual Taxes Dedicated to the General Fund ($ in millions)

Year	GE	Iinc	Cinc	TAT	Ins	Liq	Tob	PSC	Inh	Fin	Con	Misc	Total
1972	186.4	120.1	11.8		8.3	9.4	6.5	15.7	3.6	3.1	0.6	0.8	366
1973	210.7	134.9	12.9		9.2	10.2	7.1	18.4	2.1	3.7	0.9	0.2	410
1974	244.3	151.7	18.2		9.5	11.4	8.3	21.2	2.7	3.6	1.0	0.3	472
1975	287.2	168.7	31.5		9.9	12.8	8.7	24.7	3.5	3.3	0.7	0.3	551
1976	309.6	184.9	32.9		16.1	15.0	9.6	28.6	3.3	2.5	0.8	0.3	603
1977	341.0	203.0	22.7		13.3	16.2	10.3	31.2	4.1	4.9	0.9	0.3	648
1978	367.3	227.2	23.8		15.7	18.0	11.0	33.4	4.0	5.2	1.3	0.3	707
1979	430.5	264.6	32.3		18.5	20.4	11.9	33.9	4.1	7.6	1.9	0.4	826
1980	498.3	311.4	42.4		22.2	13.0	12.8	32.5	4.3	7.8	2.3	0.4	947
1981	548.9	334.4	47.0		24.0	7.0	13.8	50.2	4.6	5.8	2.0	0.4	1,038
1982	560.4	282.7	39.3		27.8	7.7	14.0	57.0	5.1	3.9	1.5	0.4	1,000
1983	585.6	347.0	24.5		26.4	9.3	17.6	66.4	6.4	-2.4	1.5	0.4	1,083
1984	624.1	402.4	36.4		26.6	-0.2	20.0	59.6	6.7	0.6	1.8	0.4	1,178
1985	669.6	428.7	44.8		28.7	20.6	19.7	62.3	12.3	3.9	1.9	0.4	1,293
1986	732.5	466.8	39.6		34.6	29.9	19.7	70.3	6.0	4.9	2.0	0.4	1,407
1987	805.3	543.3	61.5	67.7	36.0	34.6	19.1	61.8	5.2	15.3	3.6	0.4	1,654
1988	905.5	625.6	66.0	67.3	38.0	38.2	21.3	63.6	7.3	12.0	4.2	0.5	1,850
1989	1,010.9	767.3	72.3	76.0	33.4	38.6	24.4	64.9	6.7	15.8	5.2	0.5	2,116
1990	1,066.1	694.6	74.9	82.4	36.9	40.3	23.5	69.6	16.3	19.9	8.1	3.4	2,136
1991	1,164.8	872.3	95.9	16.4	45.1	40.8	26.3	74.9	11.9	20.4	5.7	0.8	2,375
1992	1,199.7	906.5	43.8	4.2	60.4	41.5	27.4	82.3	16.4	24.0	4.0	0.7	2,411
1993	1,297.9	922.5	29.3	4.2	66.9	39.3	32.2	86.2	11.8	23.8	3.8	0.7	2,519
1994	1,326.7	962.2	39.0	3.9	63.7	39.0	32.7	92.3	28.1	29.4	3.8	0.7	2,622
1995	1,358.3	925.3	30.2	4.1	62.3	38.4	35.4	100.5	16.4	17.0	3.5	0.7	2,592
1996	1,426.8	999.6	48.4	4.8	59.2	37.8	39.6	104.1	17.5	17.1	2.8	0.7	2,758
1997	1,452.3	976.0	57.8	5.2	55.8	38.3	36.4	114.4	22.2	9.7	3.0	0.6	2,772
1998	1,420.4	1,083.4	46.2	5.3	59.4	38.9	36.1	120.3	19.6	15.5	3.5	0.5	2,849
1999	1,442.3	1,068.5	42.6	2.5	52.5	38.5	42.3	121.1	28.7	9.8	4.8	0.6	2,854
2000	1,536.3	1,064.3	68.2	0.0	68.7	39.0	42.3	119.5	22.8	4.6	6.0	0.7	2,973
2001	1,640.0	1,104.6	60.8	30.6	72.1	37.8	55.1	134.6	17.5	-2.8	6.6	0.7	3,158
2002	1,612.3	1,071.2	45.5	27.3	67.9	39.1	64.5	93.4	16.6	5.2	4.9	0.6	3,049
2003	1,792.7	1,037.7	8.3	1.5	73.2	41.2	71.3	114.1	15.5	20.3	5.6	0.7	3,182
2004	1,900.4	1,168.6	56.7	5.6	78.1	41.3	78.4	99.5	9.8	-0.5	7.9	0.7	3,447
2005	2,136.6	1,381.1	85.6	12.4	83.1	43.7	84.1	108.7	12.7	36.5	12.3	0.8	3,998
Elasticity	**1.02**	**1.09**	**0.45**	**-3.55**	**1.01**	**0.81**	**1.01**	**0.86**	**0.99**	**0.44**	**1.04**	**0.46**	**1.03**

Source: Elasticities Computed from Hawaii Department of Taxation data

each of the taxes dedicated to the General Fund, and table 7b shows the short-run income elasticities for each of the taxes actually paid into the Fund. Both the constant-law and the unadjusted collections show substantial changes in the short-run income elasticities from year to

year. This is true for the individual taxes as well as for their aggregate. It appears that none of the taxes grows consistently in close tandem with total personal income in the short run.

IV. Comparisons With Results From Previous Studies

Two earlier studies examined the adequacy of Hawaii's tax structure, using methodologies similar to those used in the present study. James Mak and Shamsuddin Ahmad[9] computed a long-run elasticity of General Fund tax revenues with respect to personal income equal to 1.09 for the period from 1973 to 1988. They also calculated long-run elasticities over this period of 1.07 for the General Excise Tax and of 1.14 for the Individual Income Tax, which are quite similar to the elasticities reported in table 4.

Bruce W. Kimzey and Brent D. Wilson[10] computed an overall long-run elasticity of General Fund tax revenues equal to 1.16 for the period from 1990 to 2002. After adjusting for changes in the Tax on Banks and Other Financial Corporations, and the Transient Accommodations Tax, the elasticity declined to 1.11. They also calculated long-run elasticities over this period of 1.04 for the General Excise and Use Taxes and of 1.47 for the Individual Income Tax. The latter elasticity is quite different from that reported in table 4, probably because the authors did not adjust for important changes in the Individual Income Tax that occurred after 1998, when new tax brackets and tax rates were phased in over a period of years.

[9] Mak and Ahmad, *Op. Cit.*
[10] Kimzey and Wilson, *Op. Cit.*

Table 6: Long-run Elasticities of Actual Individual Taxes Collected ($ in Millions)

Year	GE	Iinc	Cinc	TAT	Ins	Liq	Tob	PSC	Inh	Fin	Con	Fuel	MV	ESC	Misc	Total
1972	186	120	11.8		8.3	9.4	6.5	15.7	3.6	3.1	0.6	28.3		18.3	0.2	412
1973	211	135	12.9		9.2	10.2	7.1	18.3	2.1	3.7	0.9	29.8		24.0	0.2	464
1974	244	152	18.2		9.5	11.4	8.3	21.2	2.7	3.6	1.0	29.6		25.2	0.3	527
1975	287	169	31.5		9.9	12.8	8.7	24.7	3.5	3.3	0.7	31.6		30.1	0.3	613
1976	310	185	32.9		16.1	15.0	9.6	28.6	3.3	2.5	0.8	41.5		49.0	0.3	694
1977	341	203	22.7		13.3	16.2	10.3	31.2	4.1	4.9	0.9	44.2		61.4	0.3	754
1978	367	227	23.8		15.7	18.0	11.0	33.4	4.0	5.2	1.3	46.1	6.9	73.7	0.3	834
1979	431	265	32.3		18.5	20.4	11.9	33.9	4.1	7.6	1.9	48.3	8.0	75.5	0.4	958
1980	498	312	42.4		22.2	13.0	12.8	32.5	4.3	7.8	2.3	51.1	8.4	67.5	0.4	1075
1981	549	335	47.0		24.0	7.0	13.8	50.2	4.6	5.8	2.0	53.1	8.4	58.8	0.4	1158
1982	577	283	39.3		27.8	7.7	14.0	57.0	5.1	3.9	1.5	52.6	8.5	58.3	0.4	1136
1983	601	347	24.5		26.4	9.3	17.6	66.4	6.4	-2.4	1.5	53.6	8.9	67.6	0.4	1228
1984	639	403	36.4		26.6	-0.2	20.0	59.6	6.7	0.6	1.8	54.9	9.3	76.3	0.4	1335
1985	684	429	44.8		28.7	20.6	19.7	62.3	12.3	3.9	1.9	58.5	9.6	68.7	0.4	1444
1986	747	467	39.6		34.6	29.9	19.7	70.3	6.0	4.9	2.0	67.5	15.3	67.0	0.4	1571
1987	818	543	61.5	67.7	36.0	34.6	19.1	61.8	5.2	15.3	3.6	73.3	17.8	76.1	0.4	1832
1988	920	626	66.0	67.3	38.0	38.2	21.3	63.6	7.3	12.0	4.2	85.2	18.7	77.4	0.5	2045
1989	1025	768	72.3	76.0	33.4	38.6	24.4	64.9	6.7	15.8	5.2	91.1	19.4	53.1	0.5	2294
1990	1177	695	74.9	82.4	36.9	40.3	23.5	69.6	16.3	19.9	8.1	107.2	20.3	78.9	3.4	2453
1991	1279	873	95.9	79.2	45.1	40.8	26.3	74.9	11.9	20.4	5.7	108.5	21.2	83.9	0.8	2766
1992	1295	907	43.8	80.0	60.4	41.5	27.4	82.3	16.4	24.0	4.0	128.3	40.7	44.7	0.7	2796
1993	1303	923	29.3	80.3	66.9	39.3	32.2	86.2	11.8	23.8	3.8	130.5	59.5	65.6	0.7	2856
1994	1332	963	39.0	76.5	63.7	39.0	32.7	92.3	28.1	29.4	7.7	137.4	57.8	88.6	0.7	2988
1995	1363	926	30.2	98.0	62.3	38.4	35.4	100.5	16.4	17.0	7.0	136.0	61.5	122.8	0.7	3015
1996	1432	1000	48.4	115.7	59.2	37.8	39.6	104.1	17.5	17.1	5.7	139.9	61.5	183.5	0.7	3263
1997	1457	976	57.8	125.5	55.8	38.3	36.4	114.4	22.2	9.7	6.0	138.6	62.6	170.0	0.6	3272
1998	1425	1084	46.2	127.1	59.4	38.9	36.1	120.3	19.6	15.5	6.9	136.0	63.5	155.1	0.5	3334
1999	1447	1069	42.6	136.5	52.5	38.5	42.3	121.1	28.7	9.8	7.7	136.0	65.4	149.0	0.6	3347
2000	1536	1065	68.2	168.6	68.7	39.0	42.3	119.5	22.8	7.1	9.5	136.4	78.1	150.0	0.7	3512
2001	1640	1105	60.8	177.2	72.1	37.8	55.1	134.6	17.5	-0.3	10.5	143.0	83.3	141.2	0.7	3678
2002	1612	1072	45.5	157.6	67.9	39.1	65.5	93.4	16.6	7.2	9.8	144.7	80.6	111.9	0.6	3524
2003	1793	1038	8.3	170.9	73.2	41.2	72.3	114.1	15.5	22.3	11.1	148.7	88.4	136.0	0.7	3734
2004	1900	1169	56.7	181.8	78.1	41.3	79.4	99.5	9.8	1.5	15.8	160.1	92.0	158.3	0.7	4044
2005	2137	1381	85.6	198.8	83.1	43.7	85.2	108.7	12.7	38.5	24.6	162.9	100.3	134.5	0.8	4597
Elasticity	**1.03**	**1.09**	**0.45**	**1.45**	**1.01**	**0.84**	**1.01**	**0.86**	**0.99**	**0.55**	**1.37**	**0.84**	**1.92**	**0.72**	**0.59**	**1.04**

Source: Elasticities calculated from Hawaii Department of Taxation data

Table 7a: Short-Run Income Elasticities by Type of Tax Dedicated to the General Fund (Constant-Law Collections) ($ in Millions)

Year	GE+PSC	Elcty	Iinc	Elcty	Cinc	Elcty	TAT	Elcty	Ins	Elcty	Liq	Elcty	Tob	Elcty	Inh	Elcty	Fin	Elcty	Con	Elcty	Misc	Elcty	Total	Elcty
1972	198		91		8.7		2.9		6.7		9.4		15.4		3.6		2.5		0.3		0.8		339	
1973	224	1.1	102	1.0	9.6	0.8	3.1	0.3	7.4	0.9	10.2	0.7	16.8	0.8	2.1	-3.5	3.0	1.8	0.4	3.5	0.2	-5.9	379	1.0
1974	260	1.4	115	1.1	13.5	3.6	3.2	0.4	7.7	0.4	11.4	1.0	19.6	1.4	2.7	2.3	2.9	-0.3	0.5	1.7	0.3	0.8	436	1.3
1975	305	1.3	133	1.1	23.4	5.3	3.4	0.4	8.0	0.3	12.8	0.9	20.5	0.4	3.5	2.2	2.7	-0.6	0.4	-2.3	0.3	0.6	513	1.3
1976	330	1.1	145	1.2	24.4	0.5	3.6	0.8	13.0	7.8	15.0	2.2	22.6	1.2	3.3	-0.8	2.0	-3.1	0.4	2.1	0.3	0.9	560	1.2
1977	364	1.2	159	1.1	16.9	-3.7	3.8	0.6	10.8	-2.1	16.2	1.0	24.3	0.9	4.1	3.1	3.9	11.4	0.4	0.9	0.3	0.8	603	0.9
1978	392	0.8	178	1.3	17.8	0.5	4.0	0.4	12.7	1.9	18.0	1.2	25.9	0.7	4.0	-0.2	4.2	0.7	0.7	4.9	0.3	1	657	0.9
1979	455	1.3	207	1.3	24.1	2.9	4.4	0.9	15.0	1.4	20.4	1.1	28.0	0.6	4.1	0.2	6.2	3.9	0.9	3.4	0.4	0.5	765	1.3
1980	522	1.0	242	1.2	31.7	2.2	4.7	0.4	18.0	1.4	23.4	1.0	30.1	0.5	4.3	0.3	6.4	0.2	1.1	1.5	0.4	0.6	884	1.1
1981	585	1.1	261	0.6	35.1	0.9	4.8	0.2	19.4	0.6	25.7	0.8	32.5	0.7	4.6	0.5	4.8	-2.1	1.0	-1.0	0.4	-0.4	974	0.9
1982	618	0.9	285	1.4	29.5	-2.4	5.0	0.8	22.5	2.4	27.4	1.0	33.0	0.2	5.1	1.7	3.3	-4.7	0.7	-4.1	0.4	-0.8	1031	0.9
1983	649	0.6	289	0.1	18.4	-3.9	5.3	0.5	21.3	-0.5	29.1	0.6	41.5	2.7	6.4	2.6	-1.9	-16.3	0.8	0.4	0.4	0.3	1060	0.3
1984	693	0.8	317	1.2	27.2	5.9	5.5	0.3	21.5	0.1	31.4	1.0	47.0	1.6	6.7	0.4	0.5	-15.8	0.9	2.4	0.4	0.7	1151	1.1
1985	732	0.6	337	0.7	33.5	2.6	6.1	1.3	23.2	0.9	28.5	-1.0	46.5	-0.1	12.3	9.4	3.2	58.1	0.9	0.4	0.4	1.2	1223	0.7
1986	784	1.4	366	1.7	29.8	-2.2	6.2	0.3	28.0	4.0	33.5	3.4	46.5	0.0	6.0	-10.1	4.2	5.6	1.0	1.0	0.4	0.5	1306	1.3
1987	862	1.6	421	2.5	45.8	8.9	6.2	0.0	29.1	0.6	36.8	1.6	44.9	-0.6	5.2	-2.2	12.3	32.4	1.8	14.1	0.4	-0.4	1466	2.0
1988	966	1.4	510	2.5	49.2	0.9	6.2	0.0	30.8	0.7	38.2	0.5	50.3	1.4	7.3	4.9	9.7	-2.5	2.1	2.0	0.5	1.1	1670	1.7
1989	1072	1.0	622	2.0	54.2	0.9	6.7	0.8	27.0	-1.1	38.6	0.1	57.5	1.3	6.7	-0.8	12.7	2.8	2.6	2.1	0.5	0.8	1900	1.3
1990	1227	1.4	661	0.7	56.8	0.5	7.1	0.5	29.9	1.0	40.3	0.4	55.4	-0.4	16.3	14.0	16.0	2.5	4.0	5.4	3.4	56.5	2117	1.1
1991	1338	1.0	764	1.8	72.6	3.2	6.8	-0.5	36.5	2.6	40.8	0.1	61.9	1.4	11.9	-3.2	16.5	0.4	2.8	-3.5	0.8	-8.9	2352	1.3
1992	1350	0.2	752	-0.3	33.9	-9.5	6.9	0.2	48.9	6.0	41.5	0.3	64.6	0.8	16.4	6.8	19.4	3.1	2.0	-5.1	0.7	-1.5	2336	-0.1
1993	1366	0.2	769	0.4	23.3	-5.5	6.9	0.1	54.1	1.9	39.3	-0.9	76.0	3.1	11.8	-5.0	19.2	-0.1	1.9	-1.1	0.7	-0.7	2367	0.2
1994	1399	1.4	780	0.8	30.4	17.5	5.4	-12.7	51.6	-2.7	39.0	-0.5	76.0	0.0	28.1	78.9	23.9	13.7	3.8	59.0	0.7	-3.9	2438	1.7
1995	1436	1.0	766	-0.7	23.9	-7.9	6.9	10.3	50.4	-0.8	38.4	-0.6	82.4	3.1	16.4	-15.3	13.9	-15.4	3.5	-3.4	0.7	5.2	2439	0.0
1996	1523	11.5	779	3.3	37.1	107.4	8.1	34.9	47.9	-9.7	37.8	-2.8	92.1	22.9	17.5	13.0	13.9	1.0	2.8	-35.7	0.7	-14.7	2559	9.6
1997	1525	0.2	789	0.6	44.5	10.0	8.8	4.2	45.2	-2.8	38.3	0.7	84.8	-4.0	22.2	13.3	8.1	-21.1	3.0	3.0	0.6	-3.3	2570	0.2
1998	1513	-0.2	843	2.4	51.5	5.5	8.9	0.5	48.1	2.3	38.9	0.5	80.5	-1.8	19.6	-4.0	15.6	32.6	3.5	5.4	0.5	-5.6	2623	0.7
1999	1538	0.7	898	3.2	50.6	-0.8	9.0	0.8	42.5	-5.7	38.5	-0.5	59.2	-13.1	28.7	22.8	11.0	-14.4	3.8	5.5	0.6	3	2680	1.1
2000	1626	1.2	957	1.4	66.4	6.5	10.1	2.5	55.7	6.4	39.0	0.3	59.3	0.0	22.8	-4.3	8.6	-4.6	4.8	5.0	0.7	4.5	2850	1.3
2001	1761	2.3	1009	1.5	77.1	4.4	10.6	1.4	58.8	1.5	37.8	-0.8	77.1	8.2	17.5	-6.3	5.1	-11.2	5.3	2.8	0.7	0.2	3060	2.0
2002	1740	-1.1	1041	1.1	60.3	-7.6	9.5	-3.9	60.1	0.8	39.1	1.2	91.8	6.7	16.6	-1.8	13.3	56.6	4.9	-2.3	0.6	-4.9	3077	0.2
2003	1877	2.1	1048	0.2	28.8	-13.8	10.3	2.2	70.2	4.5	41.2	1.4	84.3	-2.1	20.7	6.5	4.7	-17.0	5.6	3.5	0.7	2.5	3191	1.0
2004	2000	1.2	1176	2.3	65.3	24.1	10.9	1.2	77.0	1.8	41.3	0.0	85.5	0.3	19.7	-0.9	17.9	53.5	7.9	7.9	0.7	0.4	3502	1.9
2005	2245	1.6	1381	2.3	85.6	4.0	11.9	1.2	83.1	1.0	43.7	0.8	85.2	0.0	50.8	20.5	36.6	13.6	12.3	7.3	0.8	2	4037	2.0

Source: Elasticities calculated from Hawaii Department of Taxation data

Table 7b: Short-Run Elasticities by Type of Tax Dedicated to the General Fund (Actual Collections) ($ in Millions)

Year	GE	Elcty	Iinc	Elcty	Cinc	Elcty	TAT	Elcty	Ins	Elcty	Liq	Elcty	Tob	Elcty	PSC	Elcty	Inh	Elcty	Fin	Elcty	Con	Elcty	Misc	Elcty	Total	Elcty
1972	186		120		11.8				8.3		9.4		6.5		15.7		3.6		3.1		0.6		0.8		366	
1973	211	1.1	135	1.0	12.9	0.8			9.2	0.9	10.2	0.7	7.1	0.8	18.4	1.4	2.1	-3.5	3.7	1.8	0.9	3.5	0.2	-5.9	410	1.0
1974	244	1.4	152	1.1	18.2	3.6			9.5	0.4	11.4	1.0	8.3	1.4	21.2	1.3	2.7	2.3	3.6	-0.3	1.0	1.7	0.3	0.8	472	1.3
1975	287	1.3	169	0.8	31.5	5.3			9.9	0.3	12.8	0.9	8.7	0.4	24.7	1.2	3.5	2.2	3.3	-0.6	0.7	-2.3	0.3	0.6	551	1.2
1976	310	1.0	185	1.2	32.9	0.5			16.1	7.8	15.0	2.2	9.6	1.2	28.6	2.0	3.3	-0.8	2.5	-3.1	0.8	2.1	0.3	0.9	603	1.2
1977	341	1.2	203	1.2	22.7	-3.7			13.3	-2.1	16.2	1.0	10.3	0.9	31.2	1.1	4.1	3.1	4.9	11.4	0.9	0.9	0.3	0.8	648	0.9
1978	367	0.8	227	1.2	23.8	0.5			15.7	1.9	18.0	1.2	11.0	0.7	33.4	0.7	4.0	-0.2	5.2	0.6	1.3	4.9	0.3	1.0	707	1.0
1979	431	1.4	265	1.3	32.3	2.8			18.5	1.4	20.4	1.1	11.9	0.6	33.9	0.1	4.1	0.2	7.6	3.8	1.9	3.4	0.4	0.5	826	1.3
1980	498	1.1	311	1.2	42.4	2.2			22.2	1.4	13.0	-2.6	12.8	0.5	32.5	-0.3	4.3	0.3	7.8	0.2	2.3	1.5	0.4	0.6	947	1.0
1981	549	0.8	334	0.6	47.0	0.9			24.0	0.6	7.0	-3.9	13.8	0.7	50.2	4.5	4.6	0.5	5.8	-2.2	2.0	-1.0	0.4	-0.4	1038	0.8
1982	560	0.3	283	-2.3	39.3	-2.4			27.8	2.4	7.7	1.6	14.0	0.2	57.0	2.0	5.1	1.7	3.9	-4.9	1.5	-4.1	0.4	-0.8	1000	-0.6
1983	586	0.5	347	2.4	24.5	-3.9			26.4	-0.5	9.3	2.2	17.6	2.7	66.4	1.7	6.4	2.6	-2.4	-16.9	1.5	0.4	0.4	0.3	1083	0.9
1984	624	0.8	402	2.0	36.4	6.0			26.6	0.1	-0.2	-12.6	20.0	1.6	59.6	-1.3	6.7	0.4	0.6	-15.1	1.8	2.4	0.4	0.7	1178	1.1
1985	670	0.8	429	0.7	44.8	2.6			28.7	0.9	20.6	*	19.7	-0.1	62.3	0.5	12.3	9.4	3.9	67.6	1.9	0.4	0.4	1.2	1293	1.1
1986	733	1.8	467	1.7	39.6	-2.3			34.6	4.0	29.9	8.8	19.7	0.0	70.3	2.5	6.0	-10.1	4.9	5.3	2.0	1.0	0.4	0.5	1407	1.7
1987	805	1.6	543	2.7	61.5	9.1	67.7		36.0	0.6	34.6	2.6	19.1	-0.6	61.8	-2.0	5.2	-2.2	15.3	34.6	3.6	14.1	0.4	-0.4	1654	2.9
1988	906	1.5	626	1.8	66.0	0.9	67.3	-0.1	38.0	0.7	38.2	1.3	21.3	1.4	63.6	0.3	7.3	4.9	12.0	-2.5	4.2	2.0	0.5	1.1	1850	1.4
1989	1011	1.1	767	2.1	72.3	0.9	76.0	1.2	33.4	-1.1	38.6	0.1	24.4	1.3	64.9	0.2	6.7	-0.8	15.8	2.8	5.2	2.1	0.5	0.8	2116	1.3
1990	1066	0.5	695	-0.9	74.9	0.3	82.4	0.8	36.9	1.0	40.3	0.4	23.5	-0.4	69.6	0.7	16.3	13.9	19.9	2.5	8.1	5.5	3.4	56.1	2136	0.1
1991	1165	1.1	872	3.0	95.9	3.3	16.4	-9.3	45.1	2.6	40.8	0.1	26.3	1.4	74.9	0.9	11.9	-3.1	20.4	0.3	5.7	-3.4	0.8	-8.9	2375	1.3
1992	1200	0.5	907	0.7	43.8	-9.7	4.2	-13.2	60.4	6.0	41.5	0.3	27.4	0.7	82.3	1.8	16.4	6.7	24.0	3.1	4.0	-5.3	0.7	-2.2	2411	0.3
1993	1298	1.4	923	0.3	29.3	-5.8	4.2	0.0	66.9	1.9	39.3	-0.9	32.2	3.1	86.2	0.8	11.8	-4.9	23.8	-0.1	3.8	-0.9	0.7	0.0	2519	0.8
1994	1327	1.3	962	2.4	39.0	18.8	3.9	-4.1	63.7	-2.7	39.0	-0.4	32.7	0.9	92.3	4.0	28.1	78.4	29.4	13.4	3.8	0.0	0.7	0.0	2622	2.3
1995	1358	0.9	925	-1.4	30.2	-8.3	4.1	1.9	62.3	-0.8	38.4	-0.6	35.4	3.0	100.5	3.3	16.4	-15.3	17.0	-15.5	3.5	-2.9	0.7	0.0	2592	-0.4
1996	1427	9.8	1000	15.5	48.4	116.6	4.8	33.0	59.2	-9.6	37.8	-3.0	39.6	23.0	104.1	6.9	17.5	13.0	17.1	1.1	2.8	-38.7	0.7	0.0	2758	12.4
1997	1452	0.9	976	-1.2	57.8	9.8	5.2	4.2	55.8	-2.9	38.3	0.7	36.4	-4.1	114.4	5.0	22.2	13.5	9.7	-21.7	3.0	3.6	0.6	-7.2	2772	0.2
1998	1420	-0.8	1083	3.9	46.2	-7.1	5.3	0.7	59.4	2.3	38.9	0.6	36.1	-0.3	120.3	1.8	19.6	-4.1	15.5	21.0	3.5	5.9	0.5	-5.9	2849	1.0
1999	1442	0.8	1069	-0.7	42.6	-3.8	2.5	-26.1	52.5	-5.7	38.5	-0.5	42.3	8.5	121.1	0.3	28.7	22.9	9.8	-18.1	4.8	18.3	0.6	9.9	2854	0.1
2000	1536	1.4	1064	-0.1	68.2	12.5	0.1	-20.0	68.7	6.4	39.0	0.3	42.3	0.0	119.5	-0.3	22.8	-4.3	4.6	-11.0	6.0	5.2	0.8	6.9	2973	0.9
2001	1640	1.8	1105	1.0	60.8	-3.0	30.6	8302	72.1	1.3	37.8	-0.8	55.1	8.2	134.6	3.4	17.5	-6.3	-2.8	-43.8	6.6	2.7	0.7	-3.4	3158	1.7
2002	1612	-0.6	1071	-1.1	45.5	-8.8	27.3	-3.8	67.9	-2.0	39.1	1.2	64.5	6.0	93.4	-10.7	16.6	-1.8	5.2	-100.1	4.9	-9.0	0.6	-5.0	3049	-1.2
2003	1793	3.0	1038	-0.8	8.3	-21.6	1.5	-25.0	73.2	2.1	41.2	1.4	71.3	2.8	114.1	5.9	15.5	-1.8	20.3	76.7	5.6	3.8	0.7	4.4	3182	1.2
2004	1900	1.1	1169	2.4	56.7	111.1	5.6	52.1	78.1	1.3	41.3	0.0	78.4	1.9	99.5	-2.4	9.8	-7.0	-0.5	-19.5	7.9	7.8	0.7	0.0	3447	1.6
2005	2137	1.6	1381	2.4	85.6	6.6	12.4	15.8	83.1	0.8	43.7	0.8	84.1	0.9	108.7	1.2	12.7	3.8	36.5	-961.2	12.3	7.2	0.8	1.9	3998	2.1

Source: Elasticities calculated from Hawaii Department of Taxation data, * greater than 1000

V. Conclusions

Hawaii's tax structure produces revenues for the general operations of government (General Fund revenues) that have tended to grow at a rate slightly faster than personal income. If the structure of Hawaii's economy remains what it is today, or if changes stay within the norm of those experienced in the recent past, then the current structure of its taxes should continue to produce General Fund revenues that tend to grow at least as fast as personal income. The actions of the Legislature have, on average, tended to reduce the growth in General Fund tax revenues. It has changed taxes (statutory tax rates or the definition of the tax bases) and the proportions of the taxes dedicated to the General Fund to accomplish this purpose.

These conclusions are for long-run average tendencies. In a single year, General Fund tax revenues can, and have, grown much more rapidly or more slowly relative to personal income. From 1972 to 2005 the tax revenues grew more rapidly than personal income about 58 percent of the time. The growth in the tax revenues was negative in only three years during this period.

Appendix

Calculating the Constant-Law Tax Collections for the General Fund

This appendix describes the adjustments that were made to actual tax collections to account for major legislative changes to the State's taxes from 1972 to 2005. Collections for each tax were adjusted to the tax law in effect for fiscal year 2005. In addition to changes in the tax law, the actual tax collections were adjusted to account for the fact that tax collections may not match tax liabilities for the year, because the collection date may fall in a different year. When calculating the aggregate General Fund revenues, it was also necessary to adjust for changes in the proportion of the tax that is dedicated to the General Fund. The changes in proportions dedicated to the General Fund are reported in Table 3. In most cases, the tax collections were adjusted using calculations performed for the Department of Taxation's revenue forecasting exercise.

Individual Income Tax

Individual Income Tax rates were reduced by Hawaii's tax reform in 1986. Beginning in 1987, the top rate was reduced from 11 percent to 10 percent, the tax brackets were expanded and the standard deduction was increased. Beginning in 1998, the Individual Income Tax was reduced over a four-year period, during which time the top rate fell from 10 percent to 8.25 percent and the tax brackets were again expanded.

To adjust for changes in credits that may be claimed against Individual Income Tax for tax rebates, all such credits and rebates were added back to the series of actual income tax collections. The constant-law series was then calculated by assuming that, absent of any

legislative changes, tax credits would have been the same proportion of the Individual Income Tax in each year as they were in fiscal year 2005.

General Excise and Use Taxes and the Public Service Company Tax

Collection from the General Excise and Use Taxes for various years were adjusted to account for the fact that frequently tax liabilities incurred in one fiscal year were actually collected and reported in another fiscal year. Also, $20 million was added to collections in fiscal year 2002 to account for the increase in filing thresholds that were established by Act 8 in 2001.

Act 9, also enacted in 2001, moved gross income from transportation services out from under the Public Service Company Tax and placed it under the General Excise Tax. To account for the move, we calculate the constant-law collections for both taxes combined. In addition to shifting the tax collections from one tax to the other, the move reduced collections from both taxes combined by about $4.5 million in fiscal year 2002. Thus, $4.5 million was added to the amount collected from both taxes that year.

Estate and Transfer Tax

As a result of Hawaii's conformance with the federal Tax Relief Act of 2001, it is estimated that collections of the State's Estate and Transfer Tax were reduced by 25 percent in fiscal year 2003, by 50 percent in fiscal year 2004 and by 75 percent in fiscal year 2005. The State's tax was eliminated for decedents dying after December 31, 2004.

Tax on Liquor

Four large liquor distributors challenged the liquor tax law in 1980. The distributors paid the tax, but the amount was placed in an escrow account pending the resolution of their case. When they lost the case, the monies were paid into the General Fund.

Taxes on Cigarettes and Tobacco

The rate of tax per cigarette was established at 3 cents in 1993. Prior to that (since 1939) the tobacco tax had been at 40 percent of the wholesale price. It was raised from 3 cents to 4 cents in 1997, from 4 cents to 5 cents in 1998, from 5 cents to 6 cents in 2002, from 6 cents to 6.5 cents in 2003 and from 6.5 cents to 7 cents in 2004.

Tax on Banks and other Financial Corporations

Banks and other financial corporations litigated against claims for tax liabilities of $16.5 million. The litigation resulted in taxes being reported in 2003 that properly belonged to 2004. In addition to this adjustment, collections were adjusted by adding back tax credits claimed by these corporations in each year prior to 2005. The constant-law collections for the earlier years were then imputed by assuming that, absent legislative changes, the credits would have been the same proportion of the tax as they were in fiscal year 2005.

Transient Accommodations Tax

The Transient Accommodations Tax was imposed in 1987 at 5 percent of gross rental income. The rate was increased to 6 percent in 1994 and to 7.25 percent in 1999. In that same

year, the tax was also expanded to apply to time-share units. Since 1990 the bulk of the tax has been allocated to the counties and to special funds, with only a small share of the total collections going into the General Fund.

Tax on Insurance Premiums and the Corporation Income Tax

The collections of the Tax on Insurance Premiums and the Corporation Income Tax were adjusted to account for changes in tax credits by first adding back tax credits claimed in each year prior to 2005 and then adjusting the collections by assuming that, absent legislative changes, the credits would have been the same in proportion to the taxes as they were in fiscal year 2005.

Conveyance Tax

The conveyance tax rate was changed from 5 cents per hundred dollars of value to 10 cents per hundred dollars of value in 1993. The rate was again increased for conveyances recorded after July 1, 2005, but this change was not effective for fiscal year 2005, which is the base for creating the constant-law collections.